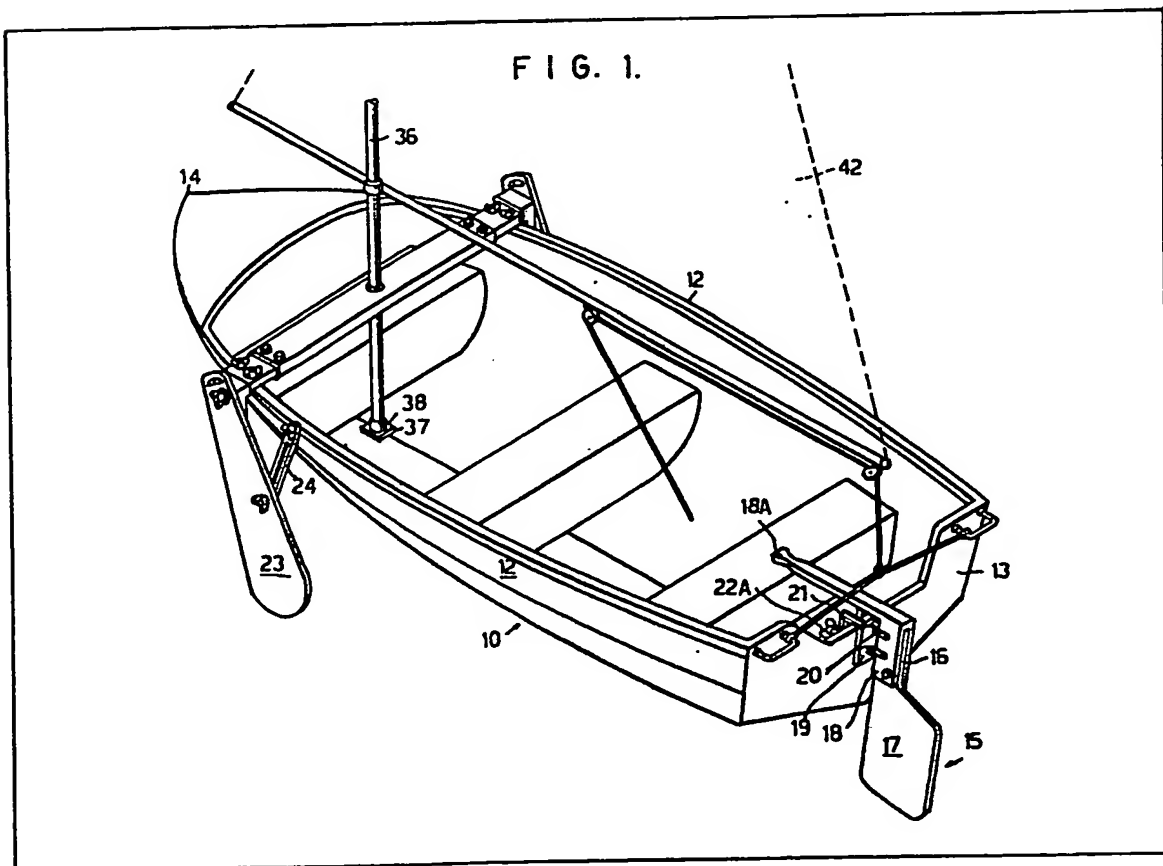


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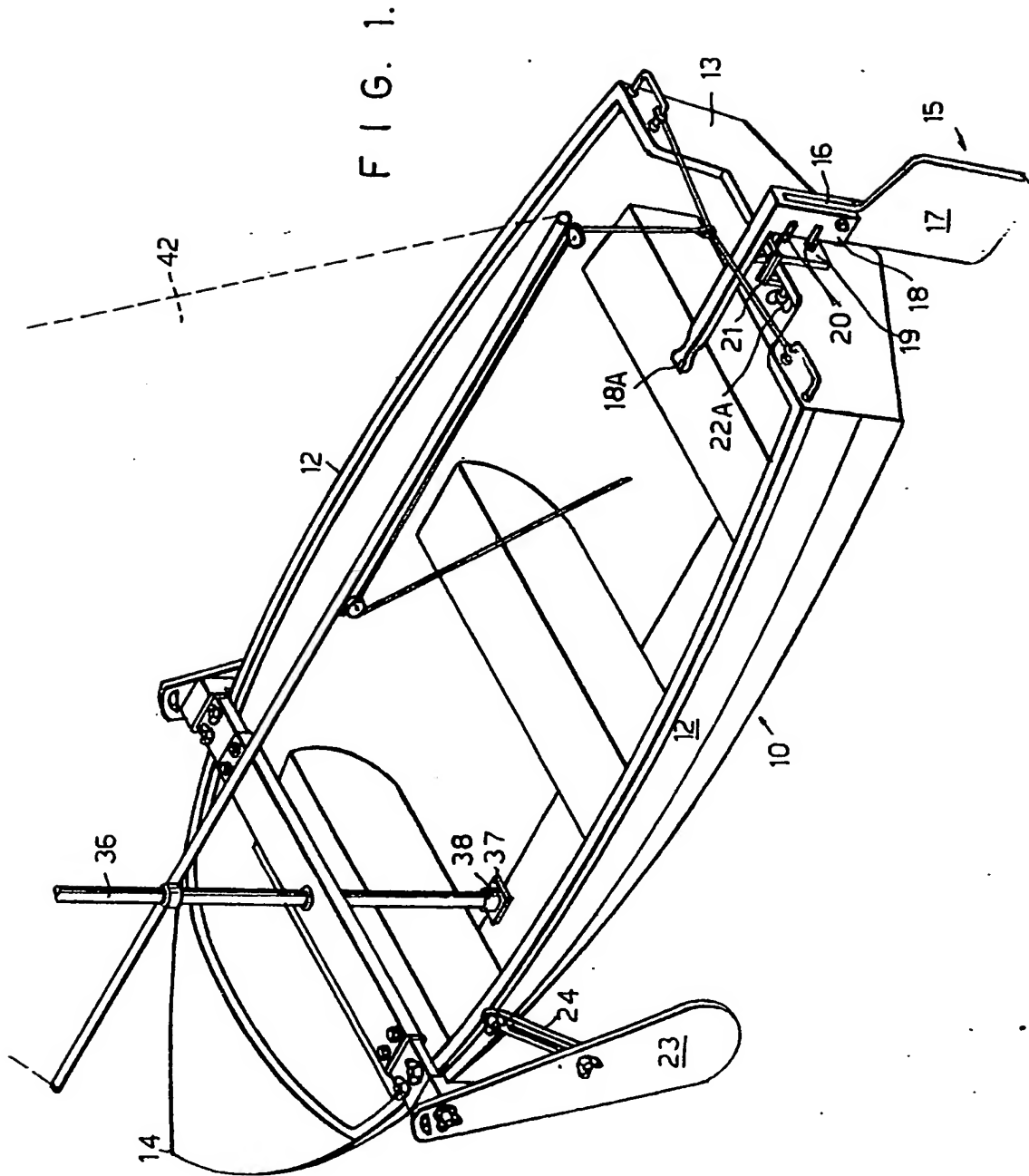
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(54) Improvements in or relating to
boats
(57) To convert a dinghy into a

sailboat, a rudder 15 is releasably
mounted to a transom by releasable
rudder mounting means, leeboard
support means such as a transverse
beam is attached to the gunnels and a
pair of leeboards 23 are pivotally
attached to the support means so that
they are located directly opposite to
each other and may be pivoted
between an operative and retracted
position. The invention also includes
within its scope apparatus for use in
the conversion as well as a sail boat
so produced.



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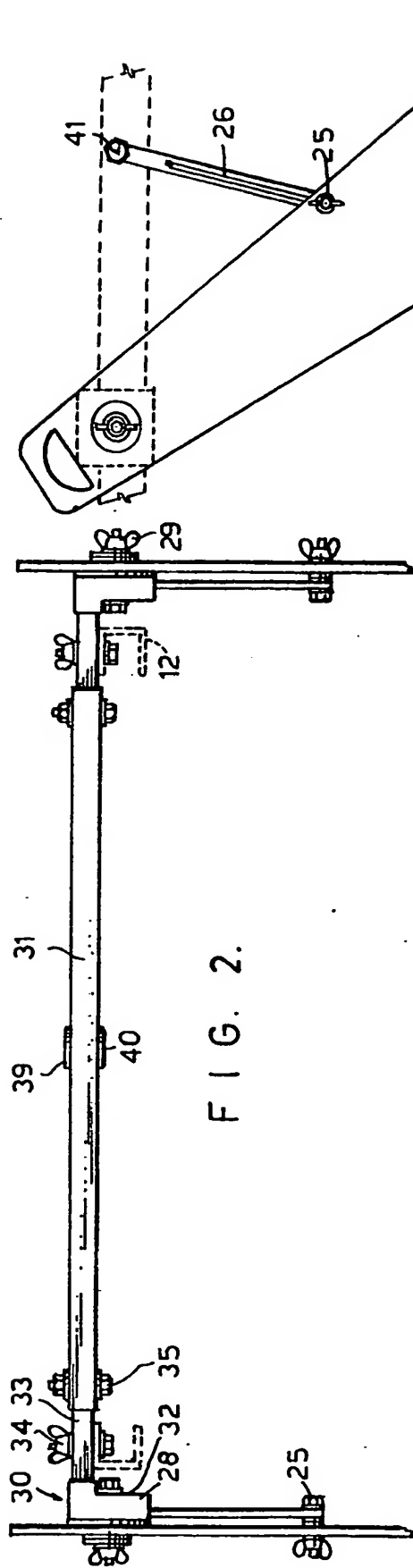


FIG. 2.

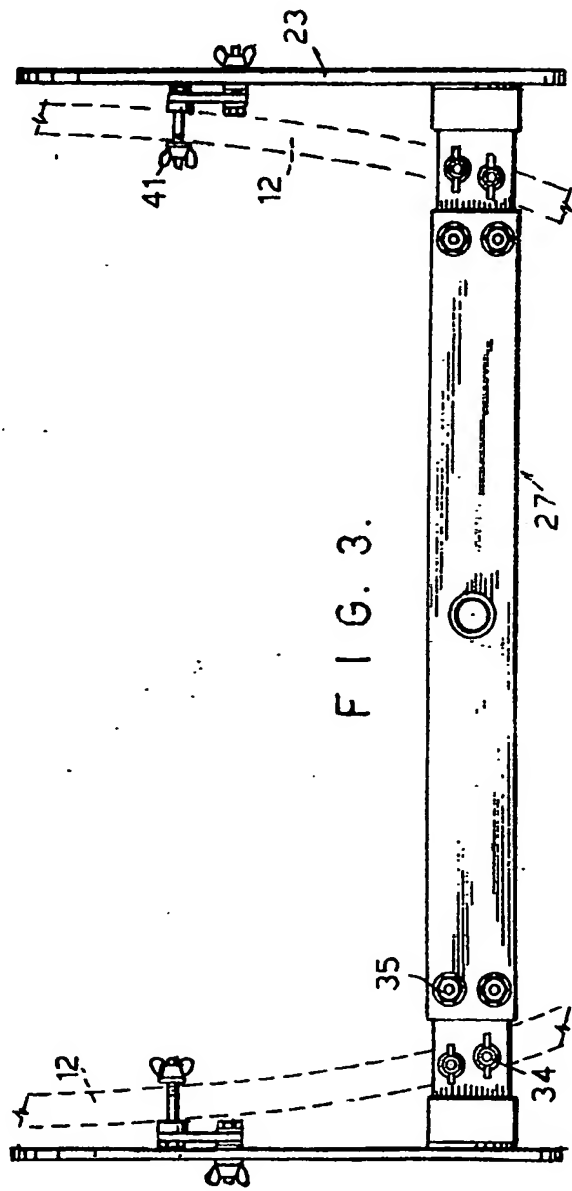


FIG. 3.

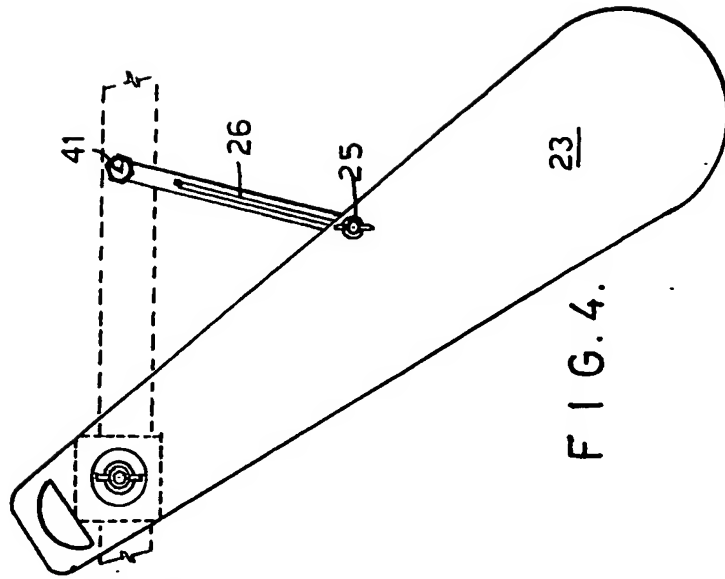


FIG. 4.

SPECIFICATION

Improvements in or relating to boats

This invention relates to a method of converting a dinghy which suitably is an aluminium dinghy into a sail boat and apparatus for use in the method as well as a sail boat which may be produced by the method of the invention.

Hitherto dinghys which are generally boats having upright sides or gunnels, a bow and a transom have been mainly utilized on a manual basis wherein oars have been used to propel the boat through the water by the occupants. Alternatively a detachable outboard motor has been attached to the transom of the dinghy when more powerful propelling means has been required. However in some situations it has been desired to convert a dinghy into an efficient sail boat and attempts have been made to accomplish this, although such attempts have not proved successful so far.

In this context it will be appreciated that it would be extremely useful for an owner of a dinghy to convert his dinghy into a sail boat since he would then avoid having to pay for a conventional sail boat, which is relatively expensive. By converting his dinghy into a sail boat he would be able to enjoy the pleasures of sailing, using his already pre-owned craft at minimal cost.

It is therefore an object of the invention to provide a method of converting a dinghy into an efficient sail boat which is simple in concept and inexpensive in execution.

It is a further object of the invention to provide apparatus for use in the above method as well as a sail boat which may be produced by the method of the invention.

The method of the invention includes the following steps:

- (i) releasably attaching a rudder to the transom;
- (ii) mounting leeboard support means to said gunnels;
- (iii) attaching a pair of leeboards to said support means so that each leeboard is located directly oppositely to each other and wherein each leeboard is releasably and pivotally attached to said leeboard support means in such a manner that it is only capable of a relatively limited amount of pivotal movement relative to its adjacent gunnel from a retracted position to an operative position;
- (iv) mounting a mast to said dinghy; and
- (v) attaching a sail to said mast to enable said dinghy to be sailed; wherein each step (1) to (v) is carried out in any desired sequence.

It will be appreciated that steps (i) (v) need not be carried out sequentially and the order in which these steps are effected may be varied to suit the particular requirements of the operator.

Most desirably in step (i) the rudder is of conventional form and is pivotable about a vertical axis which is spaced from the transom of the dinghy. The rudder may be releasably attached to the transom in any suitable manner although a

preferred releasable attachment means for this purpose will be described hereinafter in relation to the apparatus of the invention.

In step (iii) the leeboards may be of conventional shape and are mounted to leeboard support means in such a manner that they are only capable of a limited pivotal movement with respect to their adjacent gunnels.

In step (iv) the mast may be attached to a support suitably intermediate each leeboard so that the upper ends of each leeboard and the mast are substantially rectilinear. The sail in step (v) may be mounted to the mast in any convenient fashion and most preferably each leeboard is located slightly in front of the centre of effort of the sail.

In another aspect the invention provides apparatus for carrying out the above identified method and includes a plurality of separate components which are:

- (i) leeboard support means mountable to said gunnels;
- (ii) a pair of leeboards which are releasably and pivotally attachable to said leeboard support means; in such a manner that they are only capable of a limited amount of pivotal movement relative to their adjacent gunnels from a retracted position to an operative position;
- (iii) a mast and associated mounting means for said mast to the dinghy;
- (iv) a sail; and
- (v) a rudder and associated rudder mounting means which is attachable to the transom of the dinghy.

The invention also includes within its scope a sail boat having a pair of oppositely located sides or gunnels, a bow, and a transom, said sail boat including:

- leeboard support means mounted on said gunnels;
- a pair of oppositely located leeboards wherein each leeboard at one end thereof is releasably and pivotally attached to said leeboard support means in such a manner that each leeboard is only capable of a relatively limited amount of pivotal movement relative to its adjacent gunnel from a retracted position to an operative position;
- a mast and associated mounting means attached to the sail boat;
- a sail attached to the mast; and
- a rudder mounting means attached to the transom.

Preferably there is included auxiliary mounting means attached to each gunnel whereby each leeboard is pivotally mounted thereto to achieve said limited pivotal movement. The auxiliary mounting means may be unitary and attached to both gunnels but more suitably includes two separate members mounted on each respective gunnel.

Reference is now made to the attached drawings which represent an exemplary embodiment of the present invention.

In these drawings:

FIGURE 1 represents a perspective view of the

said boat of the invention;

FIGURE 2 represents an end view of the sail boat of FIGURE 1 showing in more detail the attachment of the leeboards to the leeboard support means and the auxiliary mounting means;

FIGURE 3 represents a plan view of the view shown in FIGURE 2; and

FIG. 4 represents a side view of the view shown in FIGURE 2.

In FIGURE 1 the sail boat 10 includes a pair of gunnels 12, transom 13 and bow 14. Attached to transom 13 is rudder 15. The rudder 15 may be conventional in design including an upper section 16 and lower section 17. The lower section 17 is pivotally attached to the upper section 16 in such manner that it can "kick up" or swing upwardly and outwardly relative to the upper section 16 upon encountering an obstruction. The lower section 17 is suitably substantially rectangular in shape with the longer sides of the rectangle being vertically orientated. The upper section 16 is also suitably of substantial rectangular configuration with the longer sides being vertically orientated.

The lower section 17 of the rudder may have a longer width than the upper section and is provided with a marginal top edge portion that desirably tapers downwardly as shown.

The rudder board 15 is attached to the transom 13 via transom mounting means in such a manner that the rudder board 15 may be pivoted about a vertical axis which is spaced from the transom 13 so as to allow the rudder board 15 to avoid contacting the transom 13 during its pivoting movement. In one form of transom mounting means for this purpose there may be provided a transom attachment member having a retaining hook which may be placed over the upper edge of the transom and clamped thereto. The rudder 15 is attached to member 18 by a pivot pin 22. The member 18 includes tiller arm 18A.

In a more preferred form the transom attachment member may be in the shape of an inverted L with the upright of the L being attached to a retaining plate 19 which is attached to the rudder board by spaced releasable pivot joints 20, such as a gudgeon and pintle joint.

The retaining plate 19 is oriented in a plane substantially parallel to the vertical plane of the transom 13 and the inner surface of the L upright is adapted to abut the exterior surface of the transom 13. The foot of the L is adapted to hook over the upper edge of the transom 13 and in this embodiment it may be provided with a depending projection 21 having clamp means associated therewith. One suitable clamp is an elongate bolt 22A which is screw threadedly engaged in a mating hole (not shown) in the depending projection 21. The end of the bolt 22A adjacent the transom 13 may have a securing plate (not shown) attached thereto which engages with the interior surface of the transom in use. The end of the bolt 22A remote from the transom may have a handle as shown enabling the bolt to be screwed in and out of engagement with the interior surface of the transom.

The sail boat of the invention also includes a pair of leeboards 23 wherein each leeboard is an elongate board desirably of progressively increasing width from end to end. The narrow end extends upwardly out of the water and the broader end contacts the water in use. Suitably the broader end is rounded. The narrow end of each leeboard may be pivotally attached to leeboard support means.

There also may be provided means wherein the leeboard is only capable of a relatively limited amount of pivoting movement relative to the gunnel and in this embodiment each leeboard 23 is attached in its extended or operative position at an angle to the longitudinal axis of centreline of the dinghy (i.e. about 45° to 75° but desirably 60°). When the leeboard is retracted out of the water such as by encountering an obstruction it may pivot through to a position substantially parallel with the gunnels. These limits may constitute the extremities of the pivoting movement of each leeboard.

To accomplish this limited pivotal movement there may be provided auxiliary mounting means such as a brace 24 which is pivotally attached at one end to the gunnel 12 or more suitably the top edge portion of the gunnel and at its other end is pivotally attached to the leeboard 23 at a location intermediate its ends (suitably the mid-point). The leeboard 23 may have a retaining pin 25 which is retained in position in an elongate slot 26 located in the brace. The lower end of the slot 26 defines the normal extended position of the leeboard and the upper end will define the retracted position.

It will therefore be appreciated that by the provision of such a brace 24 for each leeboard 23 each leeboard 23 is free to move in its mating slot 26 provided in its adjacent brace 24 although still providing the stability in travel necessary to the dinghy when sailing. Also the angle of the leeboard with respect to the centreline of the dinghy, which determines the centre of lateral resistance, is controlled by the brace 24. In other words the brace 24 retains the leeboard 23 at its desired angle to give maximum sailing efficiency.

The leeboard support means is suitably a transverse beam 27 extending across the centreline of the dinghy 10 and having a depending flange 28 at each end for engagement with respective upper ends of each leeboard 23. The leeboard 23 may be releasably attached to an adjacent depending flange 28 in any appropriate manner, such as by nut (e.g. wingnut) and bolt 29.

There also is provided a mast 36 and associated support means for retaining the mast 36 in the desired upright position on the floor of the dinghy. A suitable support means may include a mounting plate 37 supporting an upwardly projecting tube 38 which telescopically engages with the lower end of the mast 36. The mounting plate 37 may be welded or otherwise attached to the floor of the dinghy 10. Suitably the tube may only extend upwardly a relatively short distance from the floor of the dinghy 10. The bore of the tube may be provided with a peripheral ridge or

abutment at its base (not shown) to prevent the lower end of the mast from engaging with the floor of the dinghy.

The transverse beam 27 previously referred to may include a centrally located aperture 39 to assist in retention of the mast 36 in the desired upright position. More preferably the transverse beam 27 is provided with a sleeve 40 which extends through the aperture through which the mast is passed.

Suitably the beam 27 is tubular (e.g. box section as shown) and includes end portions 30 and an intermediate portion 31. Suitably each end portion 30 includes an L-shaped component 32 which is telescopically engaged in component 33 which telescopically engages in intermediate portion 31. Bolts 34 and 35 retain the beam assembly in place. It will be appreciated that this assembly may be adjustable in width and therefore a plurality of spaced bolt holes for bolts 34 and 35 may be provided, or elongate slots provided in members 33. Bolts 35 connect members 31 and 33 and studs 34 connect members 33 to adjacent gunnels 12. Bolts 29 attach each member 32 to leeboards 23 as shown.

The sail 42 (shown in dotted outline) may be attached to the mast 36 in any suitable manner. Preferably the sail is a lateen terylene sail. The mast is suitably aluminium tube. The leeboards are conveniently manufactured from marine ply and the transverse beam and brace for each leeboard is made from aluminium. Conveniently the rudder is also made from marine ply and the rudder supports from aluminium.

The dinghy to which the method of the invention could be applied comprises any conventional aluminium dinghy such as Clark, Brooker, De Havilland, Stessel or Stacer.

By providing leeboards pivotally attached to the leeboard support means in the manner described above and also in conjunction with a lateen sail, each leeboard in its extended operative position is retained by its respective brace at the appropriate angle to provide the correct positioning for the centre of lateral resistance (i.e. that which determines obstruction to sideways drift of the boat under sail) in relation to the centre of effort (the centre of wind pressure on the sail) of the lateen sail.

In view of the foregoing, the use of the leeboards in the manner described replace the requirement of a centreboard which also provides lateral resistance to a craft under sail.

Also it will be appreciated that the sail boat apparatus can be dismantled from dinghy 10 in minimum time by simply unbolting bolts 34 and 41 from the gunnels.

Also by providing a rudder attachment member in the manner shown this can be simply unclamped from the transom and thereby allow the rudder assembly to be removed or replaced, eliminating the need for direct rudder mounting attachments from the transom when converting

the dinghy from sail boat to power boat or vice versa.

CLAIMS

1. A sail boat having a pair of oppositely located sides or gunnels, a bow, and a transom, said sail boat including:

70 leeboard support means mounted on said gunnels;

a pair of oppositely located leeboards wherein each leeboard at one end thereof is releasably and pivotally attached to said leeboard support means in such a manner that each leeboard is only capable of a relatively limited amount of pivotal movement relative to its adjacent gunnel from a retracted position to an operative position;

80 a mast and associated mounting means attached to the sail boat;

a sail attached to the mast; and

a rudder mounting means attached to the transom.

85 2. A sail boat as claimed in Claim 1 wherein there is further included auxiliary mounting means attached to each gunnel whereby each leeboard is pivotally mounted thereto so as to achieve said limited pivotal movement.

90 3. A sail boat as claimed in Claim 2 wherein the auxiliary mounting means includes a brace pivotally attached to the gunnel, said brace also being pivotally attached to each respective leeboard intermediate the ends thereof.

95 4. A sail boat as claimed in Claim 3 wherein said brace includes an elongate slot which is engaged by a retaining pin attached to each respective leeboard, the lower end of the slot defining the operative position of each respective leeboard and the upper end thereof defining the retracted position.

100 5. A sail boat as claimed in Claim 4 wherein the extended position each leeboard is located at an angle of 45° to 75° to the longitudinal axis of the sail boat and in the retracted position each leeboard is located at an angle of 20° to 30° said longitudinal axis.

6. A sail boat as claimed in any preceding claim wherein the leeboard support means includes a transverse beam which extends across the longitudinal axis of the sail boat, the ends of the beam being spaced from their adjacent gunnels and each leeboard being pivotally attached to each respective end of the beam.

110 7. A sail boat as claimed in Claim 6 wherein said transverse beam includes end portions which are releasably and adjustably attached to an intermediate portion thereof.

8. A sail boat as claimed in Claim 7 wherein the transverse beam is tubular and each end portion is telescopically engageable with said intermediate portion.

9. A sail boat as claimed in any one of Claims 6 to 8 wherein the transverse beam includes a centrally located aperture to assist in retention of the mast in an upright position.

10. A sail boat as claimed in any preceding

claim wherein the rudder attachment means includes a retaining hook which is placed over the upper edge of the transom and clamped thereto, said rudder being pivotable about a vertical axis which is spaced from the transom.

11. A sail boat as claimed in Claim 1 substantially as herein described with reference to the accompanying drawings.

12. A method of converting a dinghy having a pair of oppositely located sides or gunnels, a bow and a transom to a sail boat, said method including the steps of: (i) attaching a rudder to the transom;

(ii) mounting leeboard support means to said gunnels;

(iii) attaching a pair of leeboards to said support means so that each leeboard is located directly oppositely to each other and wherein each leeboard is releasably and pivotally attached to said leeboard support means in such a manner that it is only capable of a limited amount of pivotal movement relative to its adjacent gunnel from a retracted position to an operative position;

(iv) mounting a mast to said dinghy; and
(v) attaching a sail to said mast to enable said dinghy to be sailed;

wherein each step (i) to (v) is carried out in any desired sequence.

13. A method as claimed in Claim 12 including the further step of attaching auxiliary support means to said gunnels which pivotally engage with each leeboard so as to achieve said relatively limited pivotal movement.

14. Apparatus for converting a dinghy into a

sail boat, said dinghy having a pair of oppositely located sides or gunnels, a bow, and a transom, said apparatus including:

(i) leeboard support means mountable to said gunnels;

(ii) a pair of leeboards which are releasably and pivotally attachable to said leeboard support means; in such a manner that they are only capable of a limited amount of pivotal movement relative to their adjacent gunnels from a retracted position to an operative position.

(iii) a mast and associated mounting means for said mast to the dinghy;

(iv) a sail; and

(v) a rudder and associated rudder mounting means which is attachable to the transom of the dinghy.

15. Apparatus as claimed in Claim 14 wherein there is included auxiliary support means mountable to said gunnels which are pivotally attachable to each respective leeboard so as to achieve said limited pivotal movement.

16. A sail boat substantially as hereinbefore described and as shown in, Figures 1, 2 and 3 of the accompanying drawings.

17. A method substantially as hereinbefore described with reference to the Figures 1, 2 and 3 of the accompanying drawings.

18. Apparatus for converting a dinghy into a sail boat substantially as hereinbefore described with reference to, and as shown in, Figures 1, 2 and 3 of the accompanying drawings.

19. Any novel feature or combination of features described herein.

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